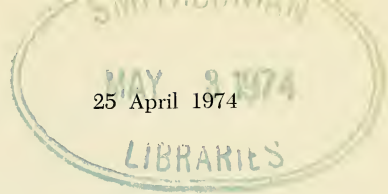


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A NEW HEART-URCHIN, *ARAEOLAMPAS ATLANTICA*,
NEW GENUS, NEW SPECIES, FROM THE NORTH
ATLANTIC AND NOTES ON THE CLOSELY
RELATED *HOMOLAMPAS*

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INTRODUCTION

In the summer of 1971 two lots of an undescribed species of *Homolampas* were discovered in the collections of the National Museum of Natural History, Smithsonian Institution (USNM). Unfortunately, both specimens were badly broken. An attempt was made to reconstruct the specimens, but in neither case was a complete specimen obtained. A similarly incomplete lot was found in the Museum of Comparative Zoology at Harvard University (MCZ). During 1972 three more lots of fragments were discovered in the unidentified echinoid collections of the University of Miami, School of Marine and Atmospheric Sciences (UMML). A description of this new species has been withheld for three years in the unfulfilled hope of finding a complete specimen. A complete specimen may be very difficult to obtain since the species occurs in deep water and has a very fragile test.

A review of *Homolampas* revealed two distinct species groups. One group, including *H. fragilis* and *H. lovenioides*, has a small test (less than 35 mm TL), no peripetalous fasciole, deeply sunken areoles that form internal pouches, globiferous pedicellariae, non-crenulate primary tubercles

¹ The first part of this work was done in the Department of Zoology, University of Maine at Orono.

which do not occur on interambulacrum 5 and three (rarely four) genital pores. The other group, including *H. fulva*, *H. glauca*, *H. hastata*, *H. rostrata* and the new species, has a large test (up to 110 mm TL, except for *H. hastata* which is less than 35 mm TL), peripetalous fasciole, slightly sunken areoles that form slight internal bulges, no globiferous pedicellariae, crenulate primary tubercles extending on to interambulacrum 5 and four genital pores. On the basis of the peripetalous fasciole alone, Mortensen (1950: 265) believed that *Homolampas* may include two distinct genera, but as the species were poorly known, he retained the single genus. The presence of the peripetalous fasciole and the other characters mentioned above are believed to merit generic distinction. Since the type-species is *Homolampas fragilis* (A. Agassiz, 1869) the group including *H. fragilis* and *H. lovenioides* is included in *Homolampas*, strict sense. The other group including the five remaining species comprise the new genus described herein. A key to the species of *Homolampas* s.s. and *Araeolampas* n. gen. is given below.

KEY TO THE SPECIES OF *Homolampas* s.s. AND *Araeolampas* n. GEN.

1. No peripetalous fasciole; no primary tubercles on interambulacrum 5; deeply sunken areoles forming internal pouches; 3 (rarely 4) genital pores; globiferous pedicellariae present; primary tubercles non-crenulate; small forms generally less than 35 mm TL
..... *Homolampas* s.s. 2
- 1' Peripetalous fasciole present; primary tubercles on interambulacrum 5; areoles not forming internal pouches; 4 genital pores; no globiferous pedicellariae; primary tubercles crenulate; generally large forms up to 110 mm TL (except *A. hastata*, which is less than 35 mm TL) *Araeolampas* n. gen. 3
2. Posterior prolongation of labrum not reaching beyond second pair of adjoining ambulacral plates (tropical western Atlantic)
..... *Homolampas fragilis* (A. Agassiz, 1869)
- 2' Posterior prolongation of labrum reaching middle of third pair of adjoining ambulacral plates (Malay Region)
..... *Homolampas lovenioides* Mortensen, 1948
3. Posterior end of test forming a rostrum surrounded by subanal fasciole; periproct visible from above (Indonesia)
..... *Araeolampas rostrata* (de Meijere, 1902)
- 3' Posterior end of test not forming a rostrum; periproct not visible from above 4

4. Only a single primary tubercle in each series of interambulacra 1, 4 and 5; small forms less than 35 mm TL (tropical eastern Pacific) *Araeolampas hastata* (A. Agassiz, 1898)
- 4' Several primary tubercles in each series of interambulacra 1, 4 and 5; large forms up to 110 mm TL 5
5. Frontal notch shallow (about 2 percent TL) (Indian Ocean)
..... *Araeolampas glauca* (Wood-Mason & Alcocks, 1891)
- 5' Frontal notch deep (about 5 percent TL) 6
6. Tridentate pedicellariae with very narrow blade (Figure 1d and e); periproct small (width plus height about 15 percent TL); pores of ambulacra double adapically (central and eastern Pacific) *Araeolampas fulva* (A. Agassiz, 1879)
- 6' Tridentate pedicellariae with wide blade (Figure 1c); periproct large (width plus height 19 to 24 percent TL); pores of ambulacra single adapically (North Atlantic) --- *Araeolampas atlantica* n. sp.

Homolampas, s.s.

Diagnosis: Small forms up to 35 mm TL; test fragile with a distinct frontal notch; ambulacral plates flush with interambulacral plates, not sunken to form petals; ambulacral pores double, placed obliquely near inner edge of plates; primary tubercles perforate, non-crenulate and present on interambulacra 1-4; primary tubercles with deeply sunken areoles that form internal pouches, as in *Lovenia*; primary spines long, curved, uniformly dentate; subanal fasciole present; apical system with 3 (rarely 4) genital pores; peristome anterior; labrum with long posterior prolongation reaching to second or third pair of adjoining ambulacral plates; anterior portion of sternum naked of primary spines; globiferous, tridentate, ophicephalous and triphyllous pedicellariae present; sphaeridia not placed in pits.

Type-species: *Lissonotus fragilis* A. Agassiz, 1869.

Araeolampas, new genus

Diagnosis: Small to large forms up to 110 mm TL; test fragile with distinct frontal notch; ambulacral plates flush with interambulacral plates, not sunken to form petals; ambulacral pores single or double, placed obliquely near inner edge of plates; primary tubercles perforate, crenulate, present on interambulacra 1-5; primary tubercles with slightly sunken areoles forming slight internal bulges; primary spines long, curved, unilaterally dentate; peripetalous and subanal fasciole present; apical system with 4 well-developed genital pores; peristome anterior; labrum with long posterior prolongation; anterior portion of sternum naked of primary spines; tridentate, rostrate and triphyllous pedicellariae present; sphaeridia not placed in pits.

Type-species: *Homolampas fulva* A. Agassiz, 1879.

Etymology: The generic name is derived from the Greek *araeo*, thin, and the Greek *lampas*, f., lamp. Gender, feminine.

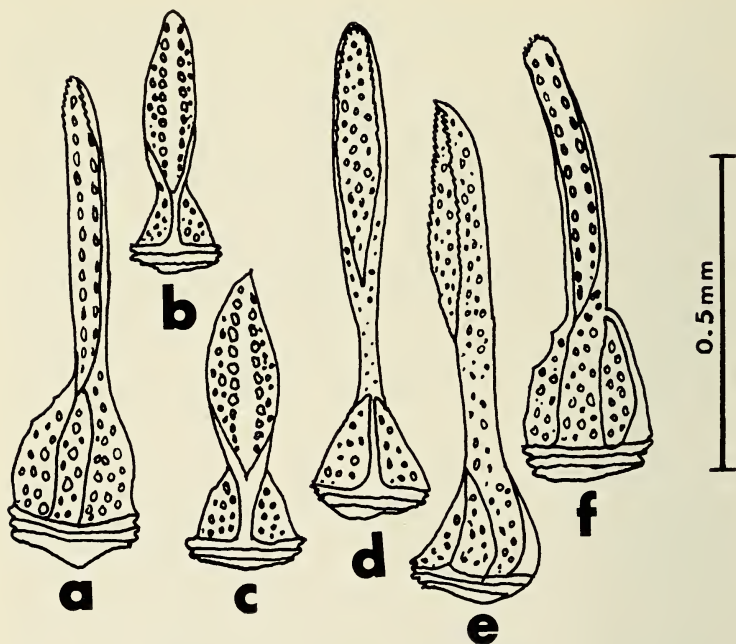


FIG. 1. Pedicellariae. a-c, *Araeolampas atlantica* n. sp., 92 mm TL, USNM 24598, holotype; d-f, *A. fulva*, 108 mm TL, USNM E889. a, rostrate pedicellaria; b, small tridentate pedicellaria; c, large tridentate pedicellaria; d, large tridentate pedicellaria; e, large tridentate pedicellaria (side view of 1d); f, rostrate pedicellaria.

Araeolampas atlantica, new species

Figures 1a-c, 2a and b

Material Examined: 1 specimen (Holotype), 92 mm TL; off Virginia, *Albatross* station 2105, 37°50' N, 73°03.8' W; 2575 m; 6 November 1883; USNM 24598. — fragments of 1 specimen; off the Azores, *Atlantis* station 20, 37°50.5' N, 26°00' W; 2585 m; 18 August 1948; USNM E7948. — fragments of 1 specimen; west of Dry Tortugas, Gulf of Mexico; 3545 m; MCZ 2910. — 1 specimen, 82 mm TL and fragments of 2 specimens; west of Georgia, *Pillsbury* station P-120, 31°48' N, 76°38' W; 1920 m; USNM E13095. — fragments of 1 specimen; west of Gabon, Gulf of Guinea, *Pillsbury* station P-292, 0°12' N, 5°11' E; 3595 m; 23 May 1965; USNM E13096. — fragments of 1 specimen; north of Haiti, *Pillsbury* station P-1429, 21°19.2' N, 73°45.5' W; 2532 m; USNM E13097.

Description: Test large (up to 92 mm TL), fragile; aboral aspect heart-shaped (test width about 86 percent TL and test height about 37 percent



FIG. 2. a, aboral aspect of *Araeolampas atlantica* n. sp., 92 mm TL, USNM 24598, holotype; b, lateral aspect of *A. atlantica* n. sp. (holotype); c, aboral aspect of *A. fulva*, 108 mm TL, USNM E889; d, lateral aspect of *A. fulva*.

TL); periproct large (width plus height 19 to 24 percent TL), not visible from above; slight indentation above periproct at ambitus; posterior part of test truncate vertically; frontal notch deep (5 percent TL); apical system anterior (32 percent TL from anterior ambitus) with 4

TABLE 1. Morphometric characters of *Araeolampas atlantica* and *A. fulva*.*

Species	Test			Distance apex to anterior ambitus	Periproct		Depth frontal notch
	length	width	height		width	height	
<i>A. atlantica</i>	91.9	86.0	37.0	31.9	12.4	11.6	4.9
	81.5			33.0	7.6	11.0	4.7
<i>A. fulva</i>	107.9	80.2	39.9	30.7	8.4	6.9	4.8

* Test length in mm; all other measurements expressed as percent TL.

well developed genital pores; peripetalous fasciole present; primary spines restricted to interambulacral areas and to within the peripetalous fasciole except for interambulacrum 5 (Loven's system) where they occur outside the peripetalous fasciole; areoles of primary tubercles about 2.8 percent TL; posterior part of areoles of primary tubercles about 2.8 percent TL; posterior part of areole deeply sunken, anterior part slightly sunken; areoles produce slight internal bulges, but not deep internal pouches as in *Homolampas*; primary tubercles perforate and crenulate; subanal fasciole present; tridentate pedicellariae with wide valves (Figure 1b and c); rostrate and triphyllous pedicellariae the same as in *A. fulva*; pores of ambulacra near apical system single; oral surface unknown.

Etymology: The specific name refers to occurrence in the Atlantic Ocean.

Distribution: In the western North Atlantic *A. atlantica* occurs from off Virginia to north of Haiti, and in the eastern North Atlantic from the Azores to off Gabon. It is known from 1920 to 3595 m.

Taxonomic Affinities: The closest relative of *A. atlantica* (Figure 2a and b) is *A. fulva* (Figure 2c and d) from the Pacific. *A. fulva* differs from the new species by having tridentate pedicellariae with narrow blades (Figure 1d and e), a smaller periproct and double ambulacral pores adapically. The morphometric characters of these two species are shown in Table 1. The Indian Ocean species *A. glauca* can be distinguished from *A. atlantica* by its shallow frontal notch.

DISCUSSION

Agassiz (1881) considered many of the generic differences discussed above for *Homolampas* s.s. and *Araeolampas* n. gen. to be due to age. He assumed that large specimens of *H. fragilis* would acquire a peripetalous fasciole and four genital pores. Although some specimens of *H. fragilis* do have four genital pores, these specimens are not necessarily the largest specimens. No remnants of a peripetalous fasciole have ever been observed on *H. fragilis* while small specimens of *A. fulva* and *A. atlantica* n. sp. have both a distinct peripetalous fasciole and four well-developed

genital pores. The peripetalous fasciole is one of the more conservative fascioles. No instance has ever been cited where this fasciole was lost during ontogeny, as has been the case for some other fascioles (e.g. subanal and lateroanal). All other generic characters mentioned above are also present on small *A. fulva* and *A. atlantica* n. sp.

The large specimen identified by H. L. Clark (1941) as *H. fragilis* (MCZ 2910) is really *A. atlantica*.

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